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Information Bulletin

• Grade 3 Mathematics •

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Grade 3 Mathematics Assessment

General Description

The Grade 3 Mathematics Achievement Test is composed of two parts.

- *Part A: Timed Number Facts* has three sub-tests—35 addition facts (to 18), 35 subtraction facts (to 18), and 25 multiplication facts (to 49), each worth one mark. Each sub-test is designed to be completed in two minutes. A break should be provided between sub-tests. (Note: additional time is NOT provided on the Timed Number Facts tests.)
- *Part B: Multiple Choice* has 40 questions, each worth one mark, integrated into two sections. Each section is designed to be completed in 30 minutes. A break should be provided between sections. Additional time of up to 30 minutes may be provided for students to complete the test.

Students record their answers to all questions directly in their test booklets.

Those students for whom the four-function calculator is a familiar classroom tool **are encouraged, but not required**, to use a calculator when writing the multiple-choice part of the Grade 3 Mathematics Achievement Test; however, students **shall not** use calculators when writing the Timed Number Facts part of the test.

The blueprint for the test is on page 3.

Reporting Categories

The following indicators briefly highlight the learnings expected in the two reporting categories.

Knowledge

- recalls facts, concepts, terminology
- knows number facts
- recognizes place value
- knows procedures for computations
- knows procedures for constructing and measuring
- knows how to use a calculator/computer
- knows mental computation and estimation strategies

Skills

- represents basic mathematical concepts in concrete, pictorial, and/or symbolic modes
- applies a mathematical concept in familiar and new situations
- creates new problem situations that exemplify a concept
- justifies answers
- judges reasonableness of answers
- communicates why and when certain strategies are appropriate
- applies basic mathematical concepts to solve problems
- demonstrates and applies relationships among numbers, operations, number forms, and modes of representation
- explains relationships among geometric forms
- uses a variety of problem-solving strategies

Part	Questions	Time	Weighting for Overall Score
A: Timed Number Facts	95	6 minutes	approximately 10%
B: Multiple Choice	40	60 minutes	approximately 90%

Description of Mathematics Assessment Standards

The following statements describe what is expected of Grade 3 students who are meeting the *acceptable standard* or the *standard of excellence*, based on outcomes in the *Program of Studies*. These statements represent the standards against which student achievement is measured. It is important to remember that one test cannot measure all of the outcomes in the *Program of Studies*.

Acceptable Standard	*Standard of Excellence*
Students who meet the *acceptable standard* in Grade 3 Mathematics have a basic understanding of mathematical concepts and related procedural knowledge. They are able to demonstrate their understanding in concrete, pictorial, and symbolic modes, and to translate from one mode to another. For example, students meeting the *acceptable standard* know that the solution to the number sentence $12 - 3 = \square$ is 9, and they can demonstrate their understanding in concrete and pictorial ways. They can write related number sentences and verify them, using manipulatives and diagrams. Students who meet the *acceptable standard* build on a foundation of previous learnings and derive meaning from problem-solving experiences in their world.	Students who meet the *standard of excellence* in Grade 3 Mathematics have a superior understanding of mathematical concepts and related procedural knowledge. They are consistently able to demonstrate their understanding in concrete, pictorial, and symbolic modes, and easily translate from one mode to another. They are able to create problem situations to illustrate concepts and to analyze and explain relationships among concepts. For example, students meeting the *standard of excellence* can write all number sentences related to $12 - 3 = \square$, justify them using manipulatives and diagrams, and create problem situations to exemplify the relationship. They are able to explain how $12 \div 3 = \square$ is related to $12 - 3 = \square$; also, they can explain why these are not defined as related number sentences. Students who meet the *standard of excellence* build on a foundation of previous learnings and derive meaning from problem-solving experiences in their world.
Students meeting the *acceptable standard* reflect upon, explain, and defend their ideas in an understandable way, using objects, diagrams, everyday language, spoken and written symbols, and, when appropriate, technology.	Students meeting the *standard of excellence* reflect upon, assess, explain, and defend their ideas and those of others, orally and in writing, using objects, diagrams, everyday and technical language, numbers and number sentences, and, when appropriate, technology.
Students meeting the *acceptable standard* perform the mathematical operations and procedures that are fundamental to the program, and apply what they know to solving simple problems in familiar settings. They can describe, to a limited degree, the steps they use to solve a particular problem.	Students meeting the *standard of excellence* perform the mathematical operations and procedures that are fundamental to the program, and apply what they know in solving novel problems. They solve and create unique problems, justify their solution, and suggest other solutions and/or strategies. They clearly describe the steps that they use.
Students meeting the *acceptable standard* have a positive attitude about mathematics in their daily lives. They demonstrate confidence when using simple mathematical procedures and when applying problem-solving strategies in familiar settings.	Students meeting the *standard of excellence* have a positive attitude toward mathematics and show confidence in performing mathematical tasks. They are self-motivated risk-takers who persevere when solving novel problems. They demonstrate initiative in trying new methods and are creative in their approach to problem solving.

Blueprint

The blueprint for mathematics shows the reporting categories under which questions are classified. The number of questions in each category is approximate.

General Outcomes*	Knowledge	Skills	Number and Proportion of Questions
Number • Develop a number sense for whole numbers 0 to 1000, and explore fractions (fifths and tenths) • Apply an arithmetic operation (addition, subtraction, multiplication or division) on whole numbers, and illustrate its use in creating and solving problems • Use and justify an appropriate calculation strategy or technology to solve problems	5 3**	9	17 (39%)
Patterns and Relations • Investigate, establish and communicate rules for numerical and non-numerical patterns, including those found in the home, and use these rules to make predictions	2	4	6 (14%)
Shape and Space • Estimate, measure and compare, using whole numbers and primarily standard units of measure • Describe, classify, construct and relate 3-D objects and 2-D shapes • Use numbers and direction words to describe the relative positions of objects in one dimension, using everyday contexts	4	8	12 (28%)
Statistics and Probability • Collect first- and second-hand data, display the results in more than one way, and interpret the data to make predictions • Use simple probability experiments, designed by others, to explain outcomes	3	5	8 (19%)
Number and Proportion of Questions	17 (39%)	26 (61%)	43 (100%)

* From the *Alberta Program of Studies for K–9 Mathematics,* June 1996

** The Timed Number Facts sub-tests (addition, subtraction, and multiplication) are included in the Number strand of the General Outcomes and are classified as Knowledge. Each sub-test is worth 1 mark.

Preparing Students for the Mathematics Test

Suggestions for Preparing Students

The best way to prepare students for writing the achievement tests is to teach the curriculum well and to ensure that children know what is expected. Many of the skills and attitudes that support test writing are, in fact, good skills and strategies for approaching all kinds of learning tasks.

Teachers are encouraged to familiarize their students with the types of questions that will appear on the test by discussing questions from achievement tests that are no longer secured. Then, have students share the strategies they used to answer the questions.

Teachers are also encouraged to share the following information with their students to help them prepare for the Grade 3 Mathematics Achievement Test.

Suggestions for Answering Questions

Timed Number Facts

Have students:

- *Complete as many questions as possible in the time allotted.*
- *Complete the questions in each sub-test in any order.* For example, some students may want to complete the easiest questions first, and then go back to the more difficult ones.
- *Print their answers as neatly as possible.*

Multiple Choice

Have students:

- *Listen to the opening scenario before they complete the mathematics questions.* This will provide students with a more meaningful context for the questions.
- *Look at all information on the test and think carefully before they answer the questions.* This will guide students to obtain information from numbers, words, signs, charts, pictures, graphs, or maps.
- *Underline in pencil key words that help them focus on what is expected.* However, students must refrain from making marks near the alternatives, other than filling in the circle of the answer they choose.
- *Remember the question that they need to answer as they look at all the information.* This will help students to focus on what is being asked of them.
- *Go back and carefully read all the information given.* This will help students keep on track when two or three questions pertain to the same diagram. (Situations like this are always identified; for example: "Use this information to answer questions ☐ and ☐.")
- *Check their calculations, even when their answer is one of the choices.* This will help students choose the correct answer rather than an answer that is a commonly made mistake.
- *Choose one BEST or CORRECT answer.* This will help students make a choice when two answers appear to be close and they can't identify the correct answer right away.

For further suggestions, see *Teaching Students with Learning Disabilities*, Alberta Learning, Special Programs Branch, pages LD 122 to 124.

ALL of the 2000 achievement tests are secured. The 1998 and the 1999 achievement tests are no longer secured and are posted on the Alberta Learning web site http://ednet.edc.gov.ab.ca.

Learner Assessment Branch Contacts

Mailing Address
Learner Assessment Branch
Alberta Learning
11160 Jasper Avenue
Edmonton AB T5K 0L2

Telephone: 780-427-0010
Toll-free telephone connection: 310-0000
Fax: 780-422-3206
Alberta Learning web site:
www.learning.gov.ab.ca

Questions or comments regarding this bulletin should be directed to

Doug Burns
Assistant Director
Doug.Burns@gov.ab.ca

Renate Taylor Majeau
Grade 3 Assessment Specialist
Renate.TaylorMajeau@gov.ab.ca